

# **Status Report on Evaluation in Distance Education**

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## **Introduction**

The following is a summary of the findings of research reviewed by the writers regarding the evaluation of students in distance education courses. The purpose of this report is to explore the art of student assessment in the public school setting, as it applies to distance education courses. We intend to provide an analysis of methods and procedures used to assess student learning that result from the participation of students in settings physically removed from the instructor, but brought into the learning environment by the use of current technologies.

### **Effectiveness of Technology in the Instructional Process**

John Cradler (1998) of the Far West Laboratory completed a meta-analysis study of the effectiveness of technology and found evidence that students gained increased mastery of vocational work force skills and that technology helped prepare students for work when emphasized as a problem-solving tool. The conclusions drawn from this extensive investigation came from the use of testing procedures that were clinically similar in both the control and experimental groups. The review of this research study supports the notion that the substance of testing and the testing procedures used in the distance education classroom and the on-site classroom are identical.

In the formative assessment of instruction there are certain principles that have been established that can be employed to guide the instructional process. In the executive summary of the “Report on the Effectiveness of Technology in Schools,” Wellburn (1996) discusses the guidance of students through the episodes of learning and found that, “numerous research studies support the use of technology as a valuable tool for learning. These studies showed that the use of technology as a learning tool could make a measurable difference in student achievement, attitudes and interaction with teachers and other students.

The evidence suggested that positive effects of technology were dependent upon the subject area, characteristics of the student population, the teacher's role, how students are grouped, the design of the software, and the level of access to technology.”

This report draws the following conclusions that are germane to the discussion of this paper.

Evidence suggests that interactive video is especially effective when the skills and concepts to be learned have a visual component and when the software incorporates a research-based instructional design.

Students felt more successful in school, were more motivated to learn and had increased self-confidence and self-esteem when using computer-based instruction. This was particularly true when the technology allowed learners to control their own learning.

In general, offering student some control over the amount, review, and sequence of instruction can result in higher achievement than having the software control all instructional decisions. However, low-achieving students and students with little prior content knowledge are likely to require more structure and instructional guidance than other students.

In tutorial and practice software, programs with feedback providing knowledge of correct responses were found to be superior to programs that require students to answer until they are correct.

Software that includes embedded cognitive strategies provides students with a learning advantage. Helpful cognitive strategies include repetition and rehearsal of content, paraphrasing, outlining, cognitive mapping or diagramming, drawing analogies and inferences, generating illustrative examples, specific techniques for reading in the content areas and using pictorial information.

These monitoring strategies apply to the delivery of distance instruction as they do to the development of software programs. The instructional design implications are commensurate with the independence of the learner. The information feedback that is provided through these types of interactions helps to guide instruction and gives valuable instructional exchange to the instructor about the learning and academic achievement of the students and the pace and effectiveness of instruction.

### **Types of testing incorporated into distance learning**

In his book, "The No Significant Difference Phenomenon," Thomas L. Russell, (1999) cites 350 research reports that were used to compare students in regular classrooms with students in distance education classrooms. He found, in meta-analysis, that there was no significant difference between the performance of students in the regular classroom and students in the distance education classroom. The summaries and his conclusions were drawn from research studies where students were in statistically treated experimental groups and in studies

where students were given the same pre and post test measures in controlled environments.

The testing that was used in these studies paralleled the testing in the regular classroom. The experimental designed allowed for the researcher to verify the effectiveness of distance education courses using forms of assessment resembling those of the regular classroom. There was no significant difference between the types of tests used in distance courses and those used in the regular classroom. Conclusions from the reference cited would indicate that tests used in distance education settings were proctor by a paraprofessional or lab assistant.

### **Computerized testing**

Dr.Sunil Harzari (1998) reported that online testing and evaluation methods offer many advantages over paper based assessment. One main advantage is the use of multimedia within tests. Graphics, animations, video, or audio files can be embedded within quiz questions for the student to observe and respond to based on scenarios. For certain areas such as language learning and music education, use of multimedia in testing offers more relevant and precise testing that was previously not possible by using paper based medium only. In general, although evidence of learning is needed to assign final course grades which would categorized as summative evaluation, online testing is best suited for

formative evaluation to provide constant monitoring and feedback as the course progresses so intervention can take place as needed.

Some issues facing problems with online assessment are authentication of students when tests are administered. Because students take tests remotely, there is no way to determine if the tests are being taken by students registered for the course without assistance from either other students or resources materials such as text books. Online testing is also limited to objective type questions which may be best suited for undergraduate course but may not find appropriate use in graduate courses that stress case study, discussion, critical thinking and reasoning. Also, electronically graded exams while providing feedback to students leave out the personal nature of positive reinforcement provided by using comments from instructors while using traditional paper based medium to inform students why the answer was marked incorrect instead of providing a generic response and the correct answer.

For instructors who decide that online testing is suitable for use in their classes, there are many different approaches to implement (online testing). Although high end products have more features but involve complex technical setup and high cost, use of low-end freeware and shareware programs that can be used to implement assessment in courses should not be overlooked.

Kleeman (1998) explains how computerized testing, surveys and assessments with can be accomplished with the Question Mark testing system. Question Mark is a powerful tool for computerizing tests, exams and assessments. It is easy to use by both the question designer and the participant or student. Question Mark saves time and money while allowing one to present questions that look professional and are administered securely. The evaluator can create the questions and tests in Question Mark, while the participant uses a run-time system or a web browser to answer the questions. The participant receives the feedback that the evaluator has specified, and answers are then saved to a file for scoring and analysis.

Quia (1999) provides a free resource that lets trainers create learning activities, give online quizzes, and track and analyze students' scores.

QuizMaker (1999) is a free tool to make Web pages with quizzes that provide instant feedback to students, and/or package answers in an e-mail that is sent back to the instructor. QuizMaker is part of QuizCenter-a free service for teachers involved in distance education and Internet instruction.

QuestGen (1999) is a full-featured assessment engine that allows trainers to deliver quizzes and track student performance over the Web. QuestGen is unusually flexible with a rich set of administrative tools.

Expert Solutions (1999) provides services through the Sylvan Prometric testing centers in cooperation with the Microsoft Corporation, Cisco, Novell and others. They provide certification through controlled testing at their testing centers. Sylvan Prometric is a worldwide distribution network for computer-based testing services. With more than 1,200 testing centers serving 80 countries, Sylvan's is the largest network of testing centers in the world. Their programs are primarily targeted at the professional certification of network engineers and applications validation. Their sophisticated operations have implications for the manner in which testing should be conducted in the educational arena. Their tests are professionally developed and secured. In order to take a test one must go to a testing center and be assessed under controlled conditions. Successful completion of the testing grants one a certificate of competence.

This is a model that could be considered for education. Standards could be developed in curriculum areas, these could be sequenced and then tests developed to certify competence in basic core curriculum areas. Thus the standard of competence would be independent of the instruction or method of learning.

This type of testing is becoming more common. Tests are controlled and certification guarantees a degree of reliability and consistency in the skills taught and measured for both the learner and the employer or learning organization.



## **Conclusions**

There is a wealth of information that substantiates the effectiveness of distance education. The bibliography cites numerous meta-studies that have been completed in recent years that conclusively support the effectiveness of distance learning through a variety of mediums. The testing that is being done in the distance education classroom mirrors that of the origination site in most cases. Outstanding issues and concerns are not with the design of the testing or of the accuracy of the assessment, but are concerned with the degree of confidence one has in the proctor and the test administration. There are variances in the training of proctors to administer tests that could be alleviated with testing schemes that do not require proctors (e.g., computer based testing), or with more effective preparation of proctors. To ensure that the testing is maximally effective testers should provide for secured tests, and administration procedures that vouch safe the degrees of confidence in the reliability and validity of student performance measurement.

There are cases of abuse, albeit these are not the norm, where students in the distance education classroom are not assessed as accurately as one would wish. The fault lies with the distant site monitor and proctor. In controlled studies where a control group (the local site) and an experimental group (the distant site) are measured in the same manner under clinical conditions, the evidence is substantive that distance education is effectual and that conventional assessment procedures are impartial and adequate.

The field of computer based testing is emerging as a powerful means of certifying competency. Leaders in the field such as the Sylvan Prometric Testing Centers are currently certifying major computer and software applicants at the novice, and expert levels in the areas of software applications and network engineering. These procedures forecast the direction for education toward secured and consistent testing needed in the education arena. When assessment matures to the point of being independent of instruction, and competence is established by a predefined and constant standard, then testing and certification will become independent of the learner, the instructor or the method of learning. One will be able to certify competence at any point in time against a uniform standard of proficiency. For example, it does not matter if one takes a course, or learns on ones own to use Microsoft PowerPoint. If one has the expertise, one can schedule to take the test to certify. The level of proficiency expected remains constant and the learner can pursue any avenue they feel is appropriate to further their learning.

The sophistication, reliability and validity of emerging computer based testing models has potential for the future of distance education. There could be standardized levels of performance that one is seeking that is independent of the instruction. The conclusions draw from this investigation would substantiate that the tests currently used in distance education classrooms is similar to that used at the origination site. The variance in the system lies with the conditions of administration and proctoring. This concern can be mitigated with the potential solution of pre-defined computer based testing that establishes a standard and provides for open-ended assessment that can certify the degree of competence of the learner independent of instruction or the method of learning.

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